

# CMB-B72

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**Barebone system  
Intel High Performance Platform**

## **Installation Guide**

Edition 1.01  
2017/01/20



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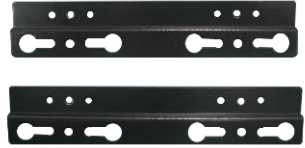
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Any questions please visit our website at <http://www.commell.com.tw>

## Packing List:



**CMB-B72 Chassis x 1**  
(Including Motherboard and Backplane)



**Desk/Wall mount x 1 (pair)**

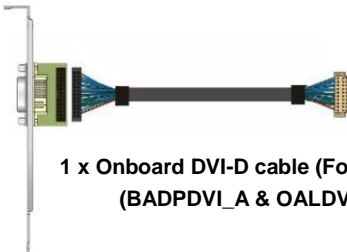


**1 x PS/2 Keyboard & Mouse Cable**  
(OALPS2/MKN)/ (1040551)

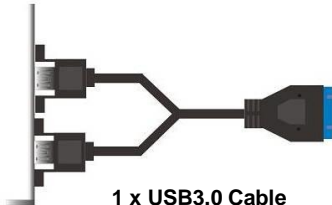


**CD Driver x 1**

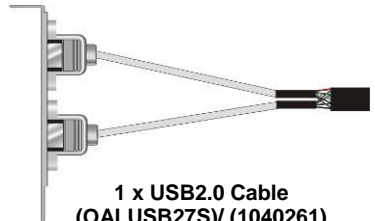
## Optional:



**1 x Onboard DVI-D cable (For Secondary DVI)**  
(BADPDVI\_A & OALDVI-DF13-35 )



**1 x USB3.0 Cable**  
(OALUSB3D) / (1040631)



**1 x USB2.0 Cable**  
(OALUSB27S) / (1040261)

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# Chapter 1 <Introduction>

## 1.1 <Product Overview>

**CMB-B72** PICMG 1.3 half-size series fanless barebone system based on Intel® 6th generation "Skylake-H" Core™ i7/i5/i3 processor with three expansion slots, is designed to meet the expansion capability(provides three expansion slots with two different combinations of PCI and PCIe slots: a. two PCI and one PCIe x16; b. one PCI, one PCIe x1 and one PCIe x16.), high performance, high-end media, broad I/O and fanless for a flexibility and wide variety of transportation, military, industrial, medical and telecommunication applications and more.

### **Intel Skylake-H Processor with Intel® QM170 Chipset PCH-H**

The 6<sup>th</sup> Generation Intel® Core™ H-series processor family is new generation and multi-core processor built on 14 nanometer process.

provide new HD Graphics 530 support triple displays at the same time, maximum supported is up to 32GB of DDR4, better performance, flexibility and more enhanced security that is suitable for a variety of intelligent systems the ideal choice.

### **All in One multimedia solution**

**CMB-B72** provides high performance onboard graphics, DisplayPort, DVI-D, VGA and High Definition Audio, to meet the requirement of the multimedia application.

### **Skylake remove EHCI, all USB ports are xHCI**

When you install Windows 7 with USB device(CDROM, Keyboard, Mouse...), Windows7 can not identify your usb device. You can use SATA CD-ROM and PS/2 to install Windows7.

## 1.2 <Product Specification>

### System

<b>Processor</b>	Intel® Skylake Core™ i7/ i5/ i3 H-series Processor FCBGA1440 package
<b>Chipset</b>	Intel® QM170
<b>Memory</b>	2 x DDR4 SO-DIMM 2133 MHz up to 32GB, Support Non-ECC, unbuffered memory only
<b>Watchdog Timer</b>	Generates a system reset with internal timer for 1 min/s ~ 255 min/s
<b>Real Time Clock</b>	Chipset integrated RTC with onboard lithium battery
<b>Expansion</b>	1 x MiniPCle (support mSATA), 1 x Half Size MiniPCle 2 x 2.5 inch SATA3 HDD/SSD Bays 1 x PCIe X16 slot, 2 x PCI slot or 1 x PCIe X16 slot, 1 x PCIe X1 slot, 1 x PCI slot

### Graphics

<b>Chipset</b>	Intel® 9th Gen integrated HD Graphics
<b>Display Interface</b>	1 x DP, 1 x <b>DVI-D</b> (optional for 2 x DVI-D), 1 x VGA

### LAN

<b>Chip</b>	1 x Intel® I219-LM Gigabit PHY LAN (Support iAMT11.0) 1 x Intel® I210-AT Gigabit LAN
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### I/O

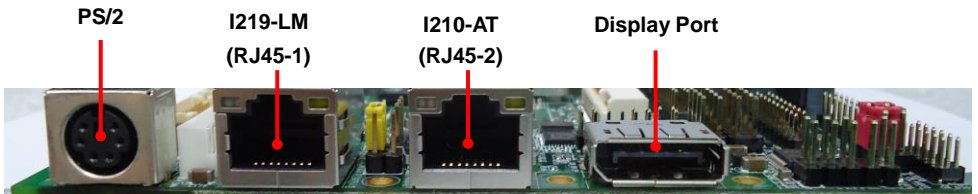
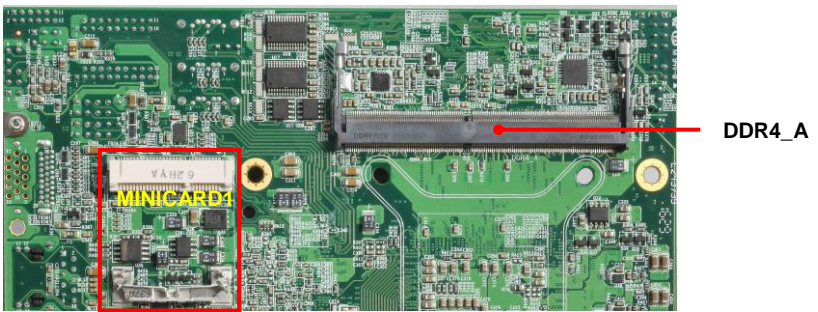
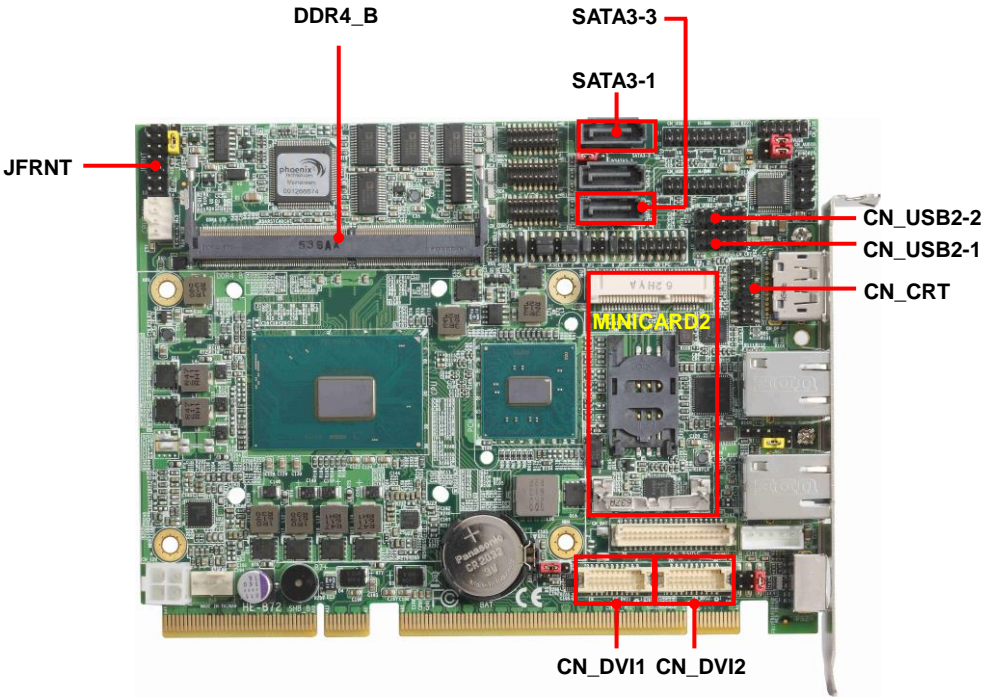
<b>Front Panel</b>	2 x USB2.0, 1 x Mic-in, 1 x Line-out, 1 x HDD LED, 1 x Power LED, 1 x Power Button
<b>Rear Panel</b>	1 x DisplayPort, 2 x LAN, 1 x PS/2, 1 x DVI, 1 x VGA, 3 x RS232, 1 x RS232/422/485, 2 x USB3.0, 1 x DC input

### Mechanical & Environmental

<b>Power Requirement</b>	DC input 9~30V , 120W
<b>Construction</b>	Heat sink (Aluminum) Chassis (Iron)
<b>Mounting</b>	Desk/Wall mounting
<b>Dimension</b>	230mm x 200mm x 130mm (L x W x H)
<b>Weight</b>	4 Kg
<b>Temperature</b>	Operating within 0°C~40°C (32°F~104°F) Storage within -20°C~80°C (-4°F~176°F)
<b>Relative Humidity</b>	0%~90% @ 40°C, non-condensing

# Chapter 2 <Product Specification>

## 2.1 <Motherboard Placement>



### 2.1.1 <Internal connectors list>

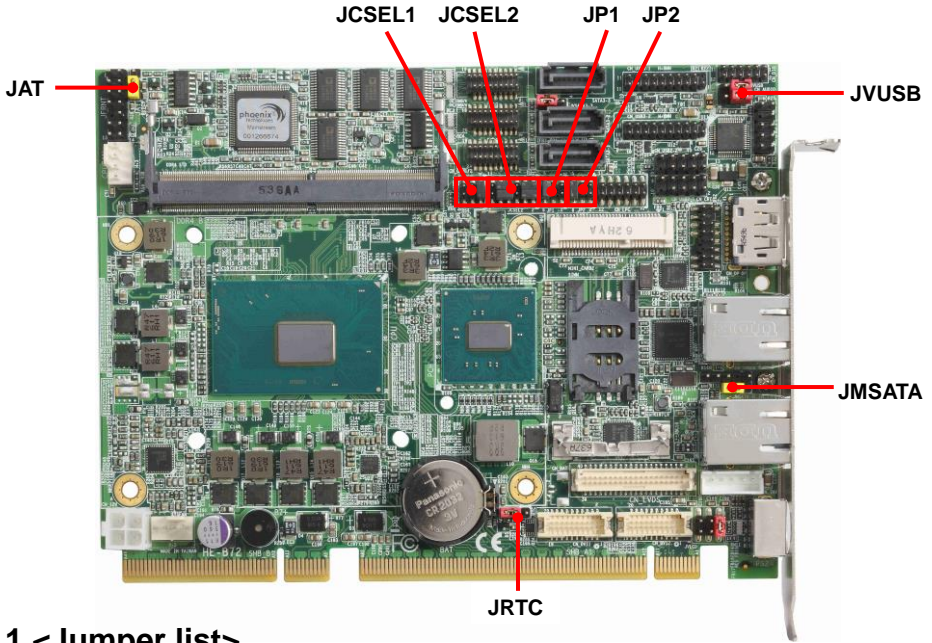
Connector	Function
DDR4_A/B	260-pin DDR4 SO-DIMM slot
SATA3-1/3	7-pin Serial ATA3 connector
CN_USB 2-1 / 2-2	5 x 2-pin USB2.0 pin header
CN_CRT	16-pin VGA connector
CN_DVI1/2	10 x 2-pin DVI connector
JFRNT	14-pin front panel switch/indicator connector
MINI_CARD1	52-pin Half-Size MiniPCle card slot
MINI_CARD2	52-pin MiniPCle card slot

### 2.1.2 <External connectors list>

Connector	Function
DisplayPort	DisplayPort connector
RJ45-1/2	RJ45 connector
PS/2	PS/2 keyboard and mouse connector



## 2.2 <Jumper Location and Reference>



### 2.2.1 <Jumper list>

Jumper	Function
JAT	Power mode select
JRTC	CMOS Normal/Clear Setting
JMSATA	MiniCard 2 mSATA Setting
JP1	COM1 Voltage Setting (For Pin 9)
JP2	COM2 Voltage Setting (For Pin 9)
JCSEL1	COM2 RS-232 RS422 RS485 Setting
JCSEL2	COM2 RS-232 RS422 RS485 Setting
JVUSB	USB Voltage Setting (for USB3.0 VCC setting)

## 2.2.2 <Clear CMOS and Power on type selection>

The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to process to clear (reset) the CMOS to its default values.

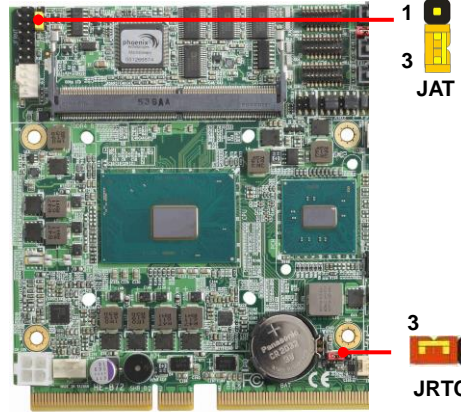
**JAT:** AT/ATX mode select jumper

Jumper settings	Function
1-2	AT mode
2-3	ATX mode (Default)

**JRTC:** Clear CMOS data jumper

Jumper settings	Function
1-2	Clear CMOS
2-3	Normal (Default)

Clear CMOS: Power off, Select jumper from PIN2-3 to PIN1-2, after approx. 10sec, then select the jumper back to PIN2-3

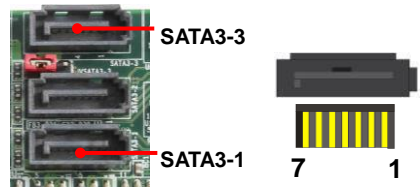


## 2.3 <Motherboard I/O interface>

### 2.3.1 <Serial ATA interface>

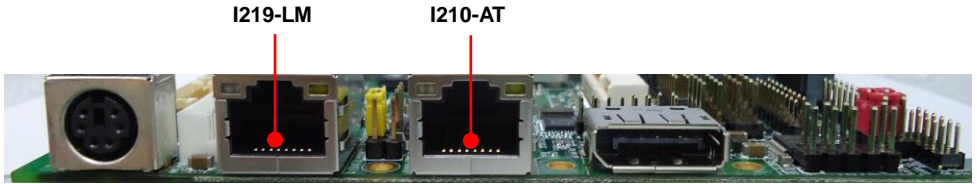
**SATA 1/3 :** SATA3 7-pin connector

Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



### 2.3.2 <Ethernet interface>

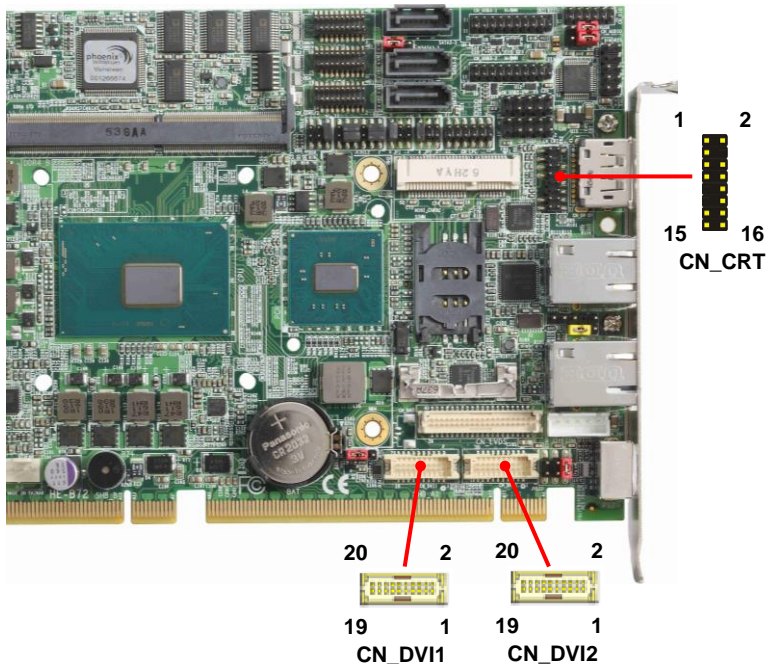
The board provides I219-LM PHY Gigabit Ethernet and I210-AT Gigabit Ethernet on rear I/O. Intel I219-LM and I210 supports operation at 10/100/1000 Mb/s data rates, with IEEE802.3 compliance and Wake-On-LAN supported.



### 2.3.3 <Display interface>

Based on the 6th Gen CPU with built-in HD Graphics 530, VGA and DVI-D up to **1920x1080@60Hz**, DisplayPort up to **4096x2304@60Hz**.

The built-in HD Graphics support triple display function with clone mode and extended mode.

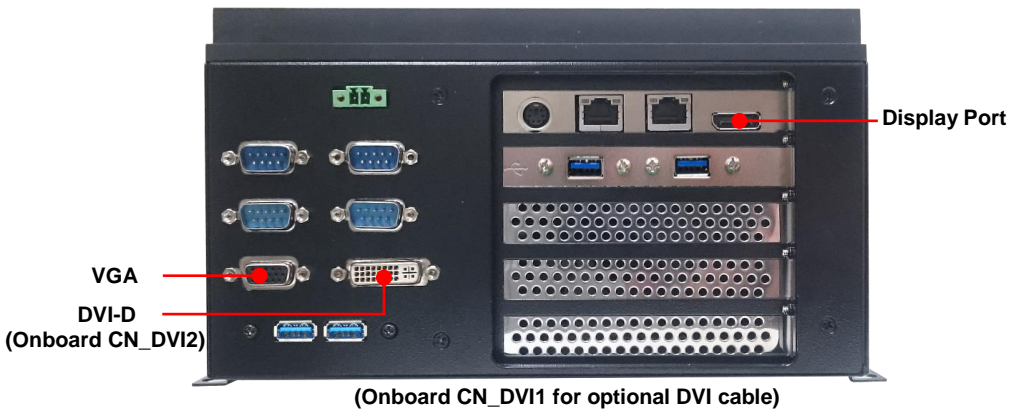


**CN\_CRT: VGA 16-pin connector (Pitch 2.00 mm)**

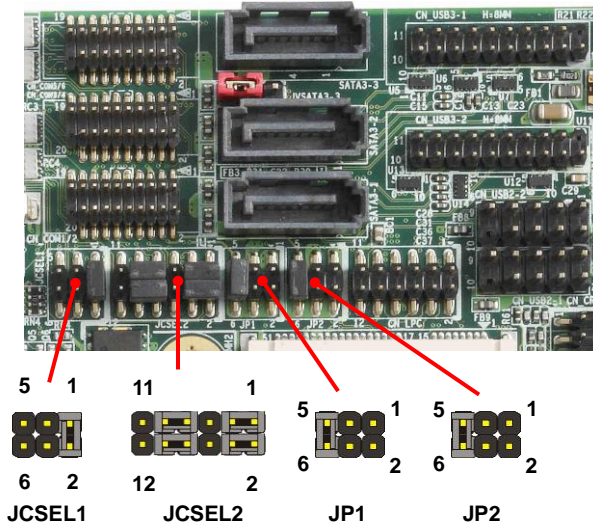
Pin	Signal	Pin	Signal
1	BR	2	BG
3	BB	4	NC
5	IOGND1	6	IOGND1
7	IOGND1	8	IOGND1
9	NC	10	IOGND1
11	NC	12	5VCCA
13	5HSYNC	14	5VSYNC
15	5VCLK	16	NC

**CN\_DVI: DVI onboard 20-pin connector**

Pin	Signal	Pin	Signal
1	+5V	2	N/C
3	HPD	4	Ground
5	TMDSTX0N	6	TMDSTX0P
7	Ground	8	TMDSTX1N
9	TMDSTX1P	10	Ground
11	TMDSTX2N	12	TMDSTX2P
13	Ground	14	Ground
15	TMDSTXCP	16	Ground
17	DVI_DA	18	DVI_SL
19	N/C	20	N/C



### 2.3.4 <Serial Port interface>



**Use JCSEL1 and JCSEL2 to select communication mode**

**JCSEL1, JCSEL2:** For configure COM2 communication mode

Function	JCSEL1	JCSEL2
RS232 (Default)		
RS485		
RS422		

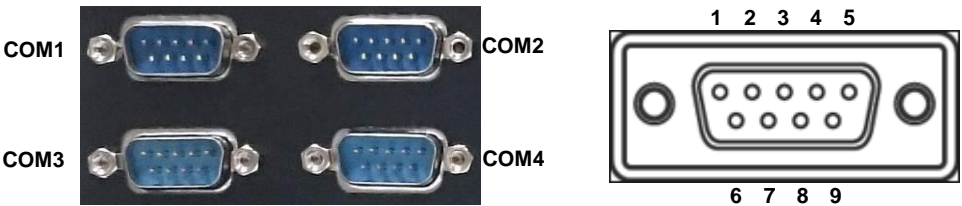
**JP1, JP2: COM1, COM2 pin-9 setting**

Jumper settings	Function
1-2	5V
3-4	12V
5-6	RI (Default)

**Effective patterns of connection: 1-2 / 3-4 / 5-6**

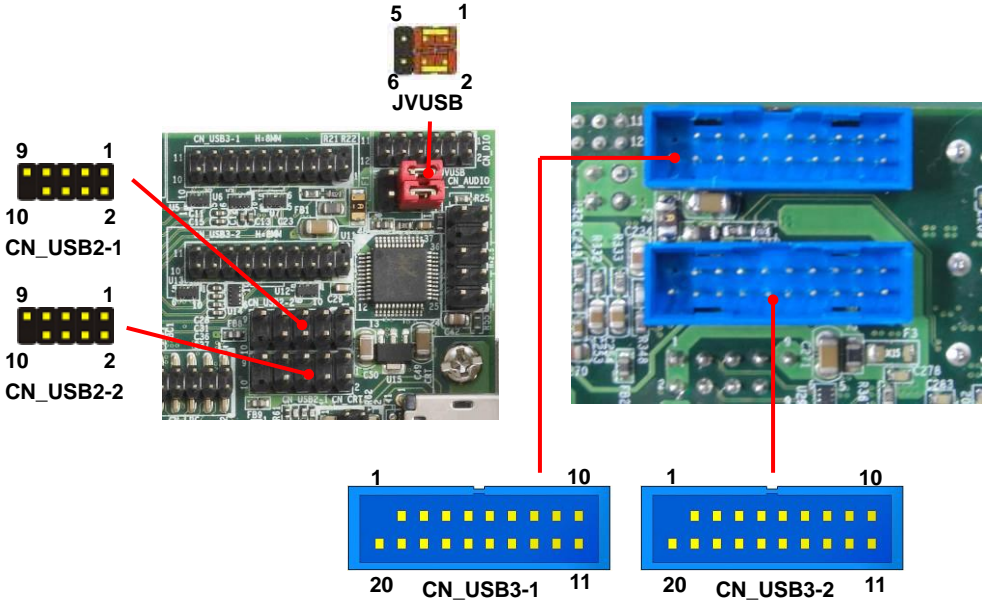
**Other may cause damage**

**Please inform us above jumper mode before order if necessary to change.**



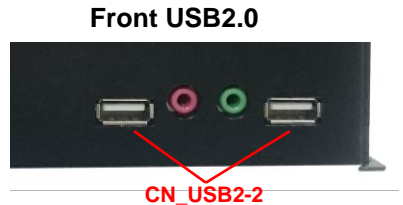
Pin	Signal	Pin	Signal
1	DCD/422TX-/485-	2	RXD/422TX+/485+
3	TXD/422RX+	4	DTR/422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

### 2.3.5 <USB interface>



**CN\_USB 2-1/2-2:** USB2.0 10-pin header (Pitch 2.54 mm)

Pin	Signal
1	5VSB
2	5VSB
3	DATA0-
4	DATA1-
5	DATA0+
6	DATA1+
7	GND
8	GND
9	GND
10	Key



**CN\_USB2-1 for optional cable**

**JVUSB:** 6-pin Power select jumper (for setting USB3.0 VCC)

Pin	Description
1-3 & 2-4	5V_SB
3-5 & 4-6	5V

**Default: 1-3 & 2-4**

Effective patterns of connection: 1-3 & 2-4 or 3-5 & 4-6

**CN\_USB3-1/3-2:** USB3.0 20-pin header (Pitch 2.00 mm)

Pin	Signal	Pin	Signal
1	NC	20	VCC (5V_SB/ 5V)
2	VCC (5V_SB/ 5V)	19	USB3.0_RX3-
3	USB3.0_RX4-	18	USB3.0_RX3+
4	USB3.0_RX4+	17	Ground
5	Ground	16	USB3.0_TX3-
6	USB3.0_TX4-	15	USB3.0_TX3+
7	USB3.0_TX4+	14	Ground
8	Ground	13	Data0-
9	Data1-	12	Data0+
10	Data1+	11	NC

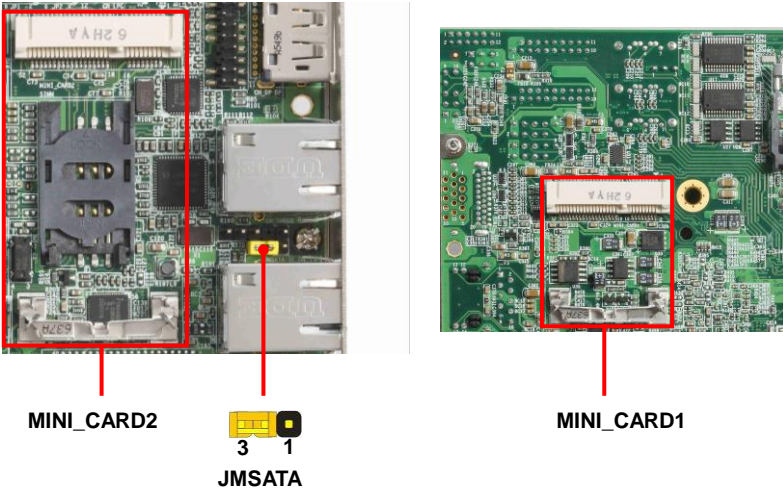
**CN\_USB3-2 for optional cable**

**Rear USB3.0**





### 2.3.7 <Expansion slot>



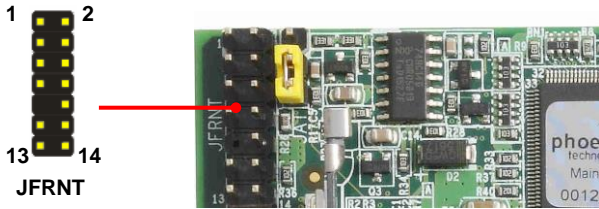
MINI\_CARD2 support mSATA by JMSATA

**JMSATA:** Setting MINI\_CARD2 to support PCIe/mSATA

Jumper settings	Function
1-2	Support mSATA
2-3	Normal operation (Default)

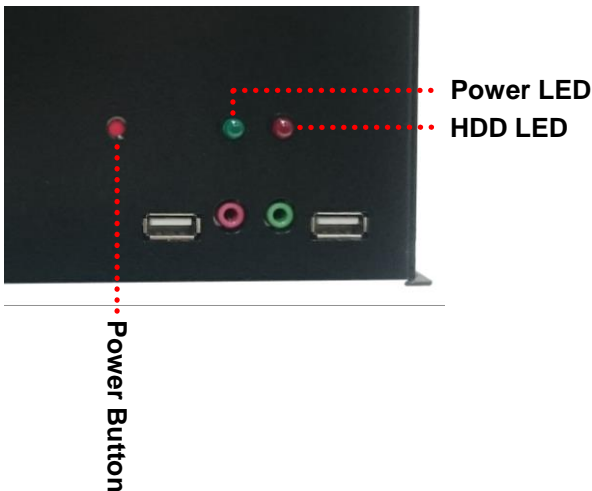
**Please inform us the MINI\_CARD2 jumper mode before order if necessary.**

### 2.3.8 <Front panel switch and indicator>



**JFRNT:** Front panel switch and indicator 14-pin header (Pitch 2.54mm)

Pin	Signal	Pin	Signal
1	HDD_LED+	2	Power_LED+
3	HDD_LED-	4	NC
5	NC	6	Power_LED-
7	NC	8	NC
9	Key	10	NC
11	Power_ON+	12	NC
13	Power_ON-	14	NC



## 2.4 <Power supply>

### 2.4.1 <DC-DC4 Power Convert Module>

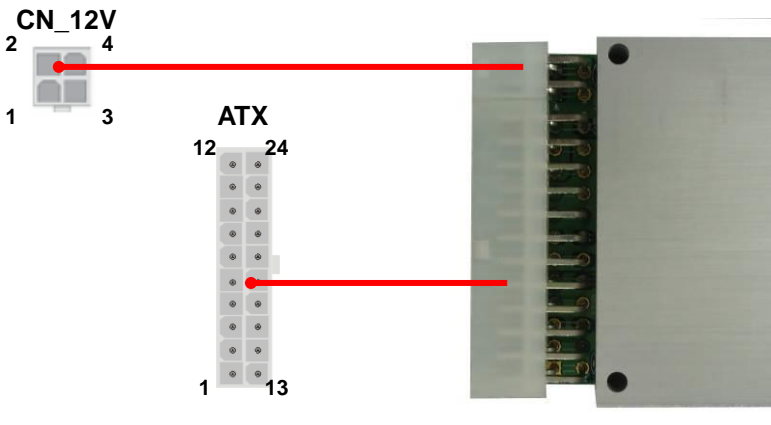
Power input **support 9~30V(120W) wide voltage input.**



DC\_2H2: Terminal Block 2-pin power connector

Pin	Signal	Pin	Signal
1	GND	3	Power in

#### 1. Power output



**CN\_12V:** 4-pin 12V connector

Pin	Signal	Pin	Signal
1	GND	2	GND
3	12V	4	12V

**ATX:** main power 24-pin connector

Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	5V	16	-PSON
5	GND	17	GND
6	5V	18	GND
7	GND	19	GND
8	Power_OK	20	NC
9	5VSB	21	5V
10	12V	22	5V
11	12V	23	5V
12	3.3V	24	GND

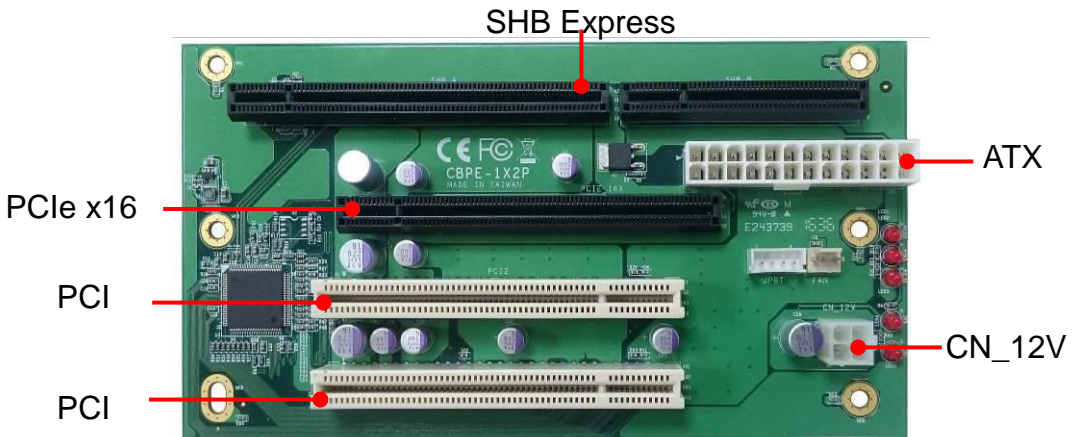
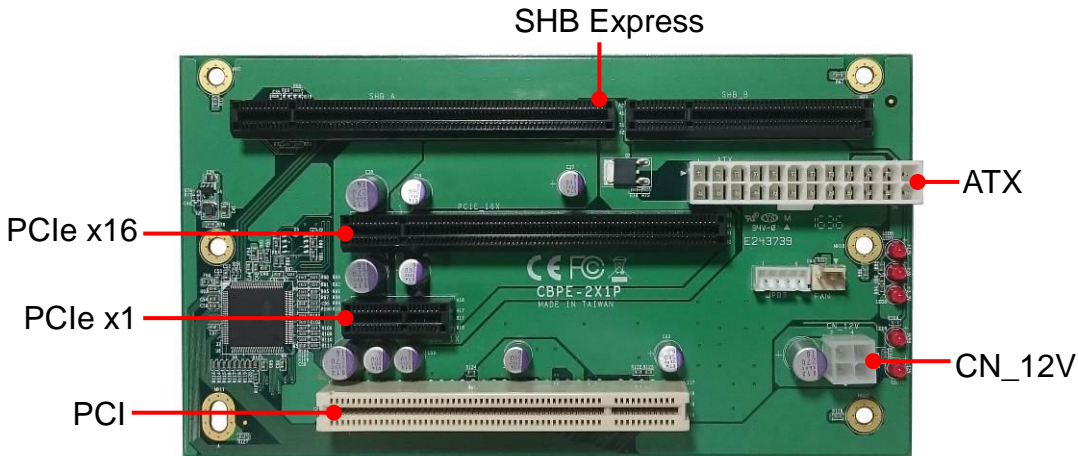
For more information refer to the [User's manual](#)

## 2.5 <Expansion slot>

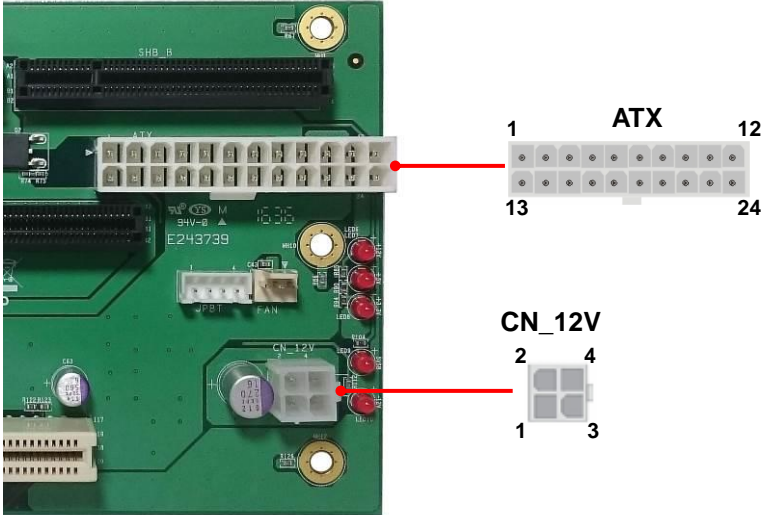
### 2.5.1 <PCIMG1.3 Half-size Backplane>

#### 1. Specification

General Specification	
Form Factor	PICMG1.3 Half size Backplane
Extended Interface	or 1 x PCIe x16 slot, 1 x PCIe x1 slot, 1 x PCI slot(CBPE-2x1P) 1 x PCIe x16 slot,, 2 x PCI slot(CBPE-1x2P)
Power Requirement	Standard 24-pin ATX power supply
Dimension	175.07 x 96.39 mm



## 2. Power input



**Connector: ATX**

**Connector Type:**

Main power 24-pin connector

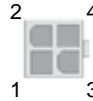


Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	5V	16	-PSON
5	GND	17	GND
6	5V	18	GND
7	GND	19	GND
8	Power_OK	20	NC
9	5VSB	21	5V
10	12V	22	5V
11	12V	23	5V
12	3.3V	24	GND

Connector: CN\_12V

Connector Type:

12V 4-pin connector



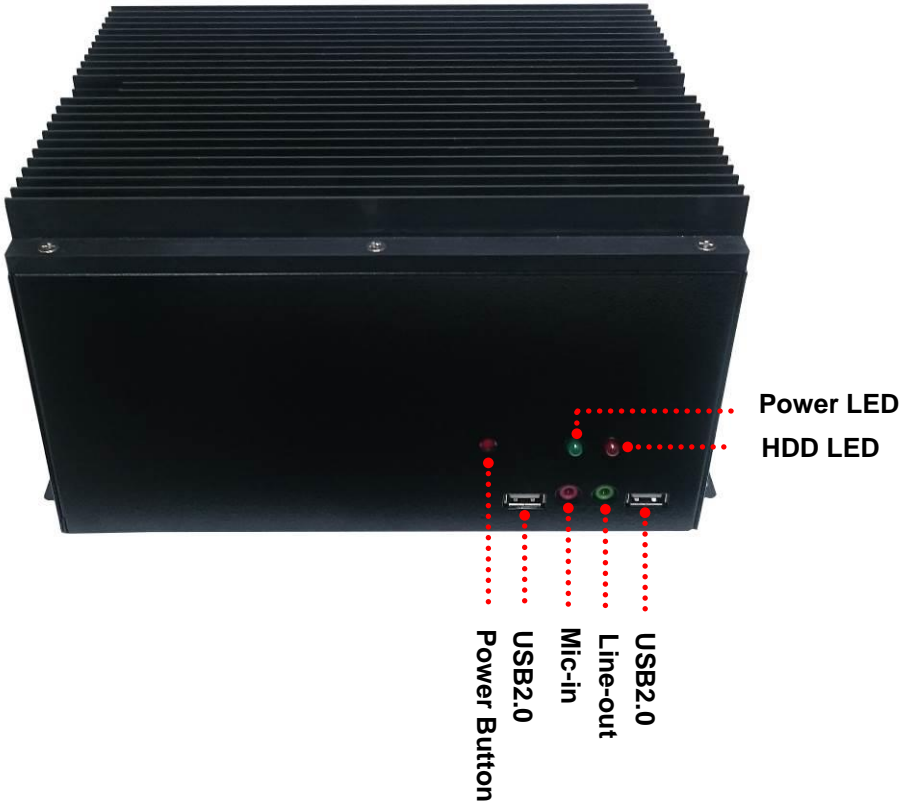
Pin	Signal	Pin	Signal
1	GND	2	GND
3	12V	4	12V

**“CN\_12V” for increase the input current.**

For more information refer to the [CBPE-1x2P](#) or [CBPE-2x1P](#) User's manual

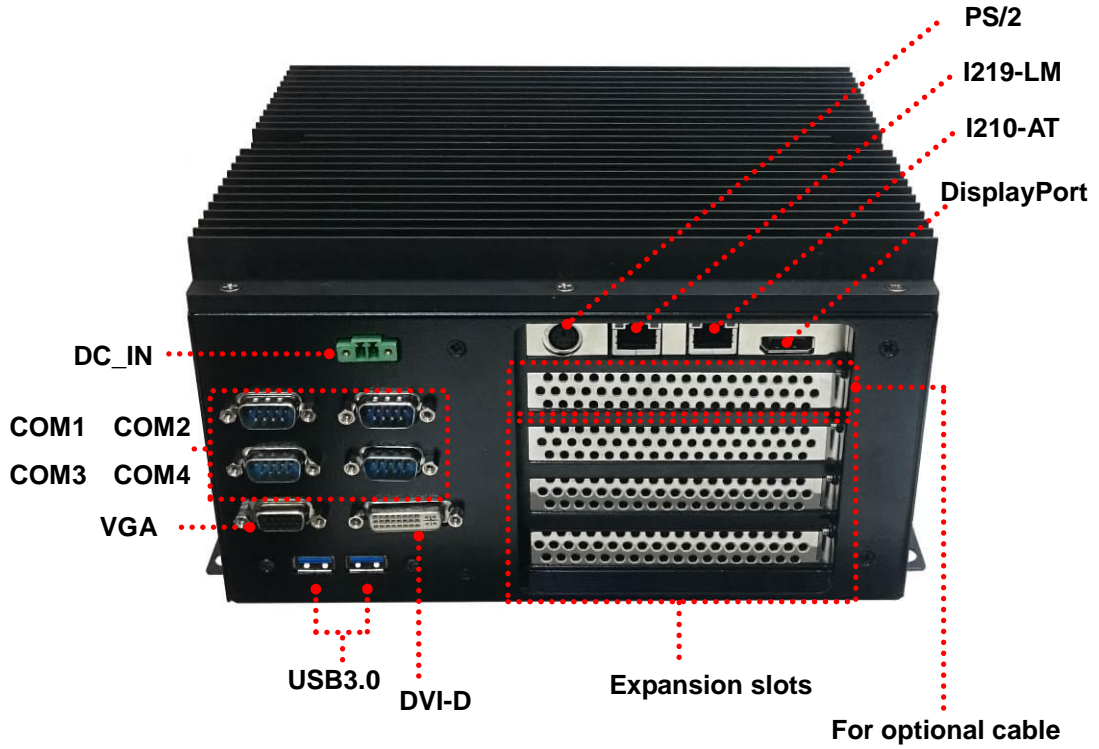
## 2.6 <I/O Panel>

### 2.6.1 <Front>





## 2.6.2 <Rear>



## Chapter 3< Hardware Installation>

### 3.1<Chassis Setup Procedure>

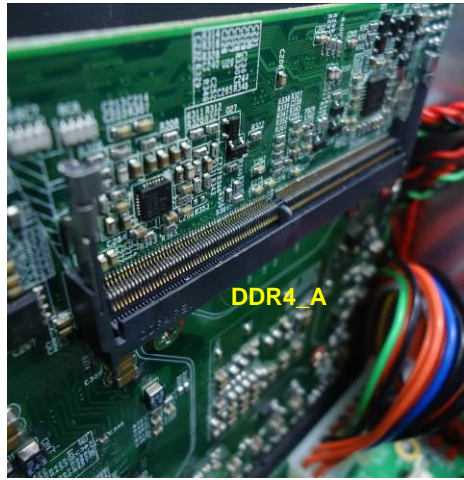
#### 3.1.1<Memory Setup>

(Two DDR4 SO-DIMM slot up to 32GB)

(a.) Screw off the chassis by the indication as the picture below.



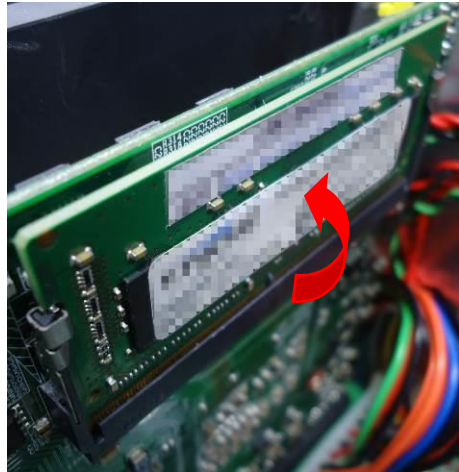
(b.) Take off the left side cover and find the DDR4\_A/B location.



(c.) Insert the DDR4 SO-DIMM module into the socket at 45 degree.



(d.) Press down the module with a click sound.

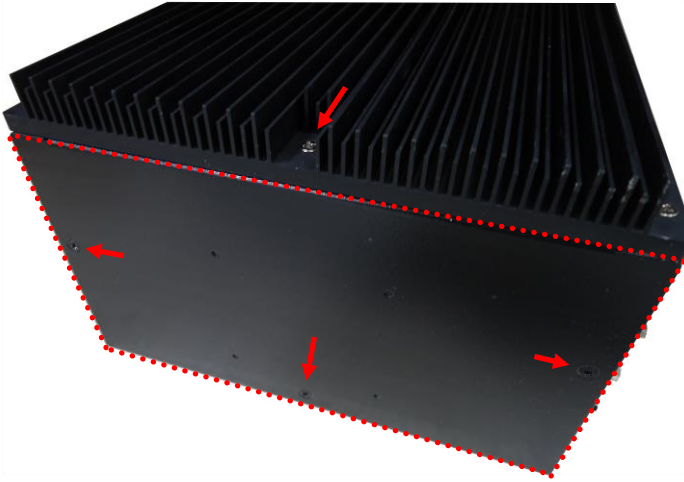


(e.) Put the cover back and screw on the chassis.

### 3.1.2<HDD Setup>

(a.) Screw off the right side cover.

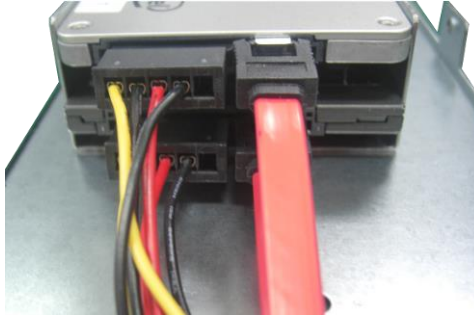




(b.) Put on the HDD into HDD holder then turn the HDD screws to tighten.



(c.) Plug SATA & SATA power cable into HDD.

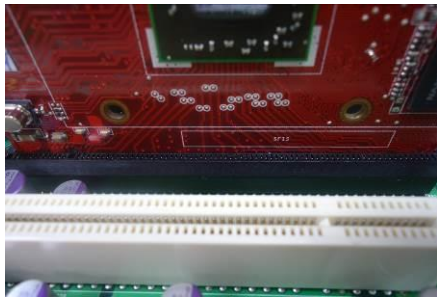
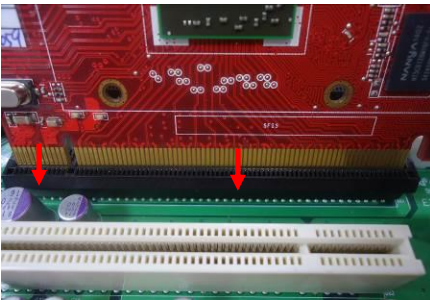


(d.) Put the cover back and screw on the chassis.

### 3.1.2<Expansion Slot Setup>

(a.) Screw off the left side cover.

(b.) Align the keyway of the card with the slot key, and then install the card securely in the slot.

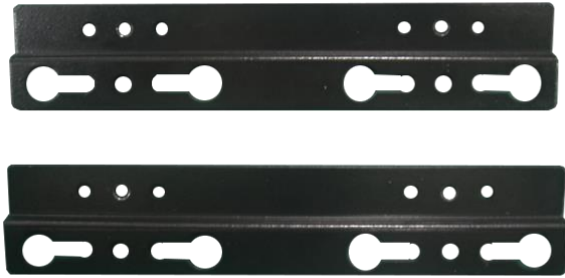


**(c.) Lock the bracket.**

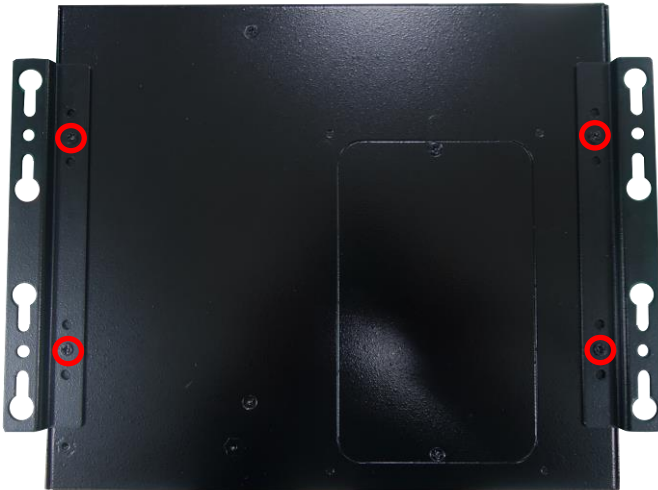


**(d.) Put the cover back and screw on the chassis.**

## Appendix A <Install Desk/Wall mount>



(a.) Screw on the rack mount as the picture below.





## Contact information

Any advice or comment about our products and service, or anything we can help you please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

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